

# MONTHLY WEATHER REVIEW.

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The MONTHLY WEATHER REVIEW is based on data from about 3500 land stations and many ocean reports from vessels taking the international simultaneous observation at Greenwich noon.

Special acknowledgment is made of the data furnished by the kindness of cooperative observers, and by R. F. Stupart, Esq., Director of the Meteorological Service of the Dominion of Canada; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. I. S. Kimball, General Superintendent of the United States Life-Saving Service; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. N. Shaw, Esq., Director Meteorological Office, London; Maxwell Hall, Esq., Government Meteorologist, Kingston, Jamaica; Rev. L. Gangoiti, Director of the Meteorological Observatory of Belen College, Havana, Cuba.

As far as practicable the time of the seventy-fifth meridian is used in the text of the MONTHLY WEATHER REVIEW.

Barometric pressures, both at land stations and on ocean vessels, whether station pressures or sea-level pressures, are reduced, or assumed to be reduced, to standard gravity, as well as corrected for all instrumental peculiarities, so that they express pressure in the standard international system of measures, namely, by the height of an equivalent column of mercury at 32° Fahrenheit, under the standard force, i. e., apparent gravity at sea level and latitude 45°.

## FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

### IN GENERAL.

In November the great permanent winter area of high barometric pressure begins to build up over the interior of Asia. Barometric pressure also increases over the interior portions of Europe and North America. Over Bering and Greenland seas permanent winter areas of low pressure begin to form. In the tropical regions of the North Atlantic Ocean the weather is usually fine. In the Pacific Ocean area the typhoon season is nearing its end.

In the United States the Pacific coast wet season has fully set in. On the northeastern slope of the Rocky Mountains and in Arizona and New Mexico November is one of the driest months of the year. Killing frost is likely to occur in the Gulf and South Atlantic States, and light to heavy frost in northern portions of the Florida Peninsula.

In November, 1907, the Asiatic high barometer area began to build up rapidly during the second decade, and early in the third decade readings above 31.00 inches were reported in that region. During this period barometric pressure gradually diminished in the Iceland area to a reported minimum of 28.48 inches on the 22d. Pressure was generally low during this period over Bering Sea, and high over the Azores and Hawaiian Islands. This general distribution of pressure was attended by unsettled and unseasonably warm weather over the middle and northern latitudes of the North American Continent and western and northwestern Europe.

In the United States the first decade of the month was stormy. From the 1st to 3d a storm advanced with increasing intensity from the north Pacific to the north Atlantic coasts, attended by heavy rain generally over the eastern half of the country, and by gales on the Great Lakes and the Atlantic coast. Following this disturbance pressure continued low in the north and northwest, and on the 6th a barometric depression covered the country east of the Mississippi River, with a storm of marked strength central over Virginia. This storm deepened during the 6th and by the evening of that date had advanced to southern New England, where a barometric minimum of 28.90 inches was reported at Hartford, Conn. From the 1st to 4th severe storms were experienced over southwestern Europe.

The first half of the second decade of November was, on the whole, fair and cool in the United States. During this period a cool wave swept from the northeastern slope of the Rocky

Mountains eastward and southeastward, carrying the line of zero temperature into northern Nebraska, and the line of freezing temperature to the interior of the Gulf and South Atlantic States. Light frost was reported in the interior of northern Florida. During the last half of the month a succession of barometric depressions advanced northeastward from the Gulf of Mexico, attended by frequent and at times heavy rain in the Gulf and Atlantic States, by snow in the Northeastern States, and by gales of greater or less severity along the Atlantic coast and over the Great Lakes.

The month closed with rapidly rising pressure over the British Isles-Iceland area and falling pressure over the interior of Asia and east-central Europe. In the United States the so-called permanent winter high area had formed over the Plateau region, and seasonably cool and generally fair weather had set in over interior-western districts.

BOSTON FORECAST DISTRICT.\*  
[New England.]

The weather of the month was generally characteristic of the season, with the precipitation above the normal over a large portion of the district, and temperature near the normal or above. Snow fell in parts of all the New England States, with the monthly amounts ranging from a trace to 14 inches, the latter amount being at Jacksonville, Vt. Severe gales prevailed along the coast on the 6th and the 24-25th. On the 6th the high winds did minor marine and local damage, and delayed more or less shipping of all classes. During the storm of the 24-25th shipping was completely tied up thruout the coast. Vessels in Boston Harbor dragged anchor and there were several narrow escapes from collisions. The tides were the highest in many years, and hundreds of cellars along the water front and in lowlands were flooded, and much damage resulted. Seaside cottages and other property suffered more or less damage from the gales and the high water. The Canadian schooner *Cora B* was driven ashore near Gloucester; damage, \$20,000; crew saved. The schooner *Eastern Light* went ashore at High Cliff and was badly damaged; crew saved. The schooner *Lucy E* was wrecked near Duxbury; crew saved by the Gurnet Life Saving Station. According to newspaper accounts there was more or less damage to shipping along the entire New England coast.

Storm warnings were issued on the 2d, 6th, 20th, 21st, and 24th. There were no storms without warnings. The timely

warnings of the 6th and the 24th doubtless resulted in the saving of much property and many lives.—*J. W. Smith, District Forecaster.*

NEW ORLEANS FORECAST DISTRICT.\*

[Louisiana, Texas, Oklahoma, and Arkansas.]

The rainfall was excessive and the temperature deficient. A severe cold wave, the first of the season, past over the district from the 10th to the 14th, when freezing temperatures occurred almost to the coast line. Timely warnings for frost and freezing temperatures were issued for the northern portion of the district on the 9th and for other portions on the 10th, 11th, 12th, and 13th. The warnings, which were widely distributed, enabled the protection of vegetation and the windrowing of sugar cane in exposed localities. Cold waves occurred in some sections without warnings, but the warnings for freezing temperature served all public interests in these localities. Frost warnings, which were partially verified, were issued for limited areas on four other dates. No general frost or freeze occurred without warnings. Storm warnings were issued on the 11th, 16th, and 19th, and brisk to high winds occurred during the display in each instance. No general storm occurred without warnings.—*I. M. Cline, District Forecaster.*

LOUISVILLE FORECAST DISTRICT.\*

[Kentucky and Tennessee.]

During the month seasonable conditions largely prevailed for the district as a whole. In Kentucky the temperature and precipitation were both somewhat below normal, but in Tennessee these elements averaged nearly normal, except in the northeastern portion, where the rainfall was nearly double the average November amount. Clear skies largely predominated, being in decided contrast to last year.

There were six marked disturbances during the month. Two of these, the 1st-2d and the 30th, moved in from the northwest, while the other four—17-18th, 19-20th, 22d-24th, and 28th—were from the southwest, or west Gulf section. The storm of the 19-20th, which moved from Texas up the Mississippi Valley to the Lakes, was the most severe, being attended by heavy rains and high winds.

There were no cold waves, and no special warnings were issued, altho advice of decidedly colder weather was sent out the morning of the 10th.—*F. J. Walz, District Forecaster.*

CHICAGO FORECAST DISTRICT.\*

[Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, and Montana.]

The month was characterized by a marked deficiency in precipitation and an unusual amount of sunshine over the entire district; the temperature was above the normal, except in the extreme eastern portions.

No cold waves occurred during the month, and there was no considerable fall of snow, except on the 30th, when a fall of several inches occurred in the western Lake region. Special snow warnings were issued for southern lower Michigan and northern Illinois.

The month was unusually free from severe windstorms on the Great Lakes. Warnings were issued on eight dates in advance of storms of moderate energy, and no casualties were reported.—*H. J. Cox, Professor and District Forecaster.*

DENVER FORECAST DISTRICT.\*

[Wyoming, Colorado, Utah, New Mexico, and Arizona.]

The month was cool and generally dry. There were comparatively few marked changes in temperature. Rain or snow fell on but few days, and was generally below the normal amount.

No special warnings were issued. Moderate cold waves, without warnings, occurred as follows: Northeastern Colorado, on the 10th; central Wyoming, on the 19th; and northwestern Wyoming, on the 27th. These cold waves were not marked by unusually low temperatures.—*P. McDonough, Local Forecaster, temporarily in charge.*

SAN FRANCISCO FORECAST DISTRICT.†  
[California and Nevada.]

This was the driest November recorded at this station during a period of fifty-nine years, excepting only November, 1890, which was without any rain over a large portion of the State. At San Francisco there were but three rainy days, the total amount being .04 inch. The normal amount at San Francisco in November, based upon a fifty-nine years record, is 2.64 inches, so that the deficiency during the current month is very marked. The chief cause was the presence of a persistent high area over the Rocky Mountain section, the basin ranges, and the Pacific slope. This has caused northerly winds thruout California and a large portion of Nevada, with cool mornings and high afternoon temperatures.

A number of frost warnings were issued during the month, but there were no injurious frosts, and no special warnings were necessary.—*A. G. McAdie, Professor and District Forecaster.*

PORTLAND, OREG., FORECAST DISTRICT.†

[Oregon, Washington, and Idaho.]

The month was uniformly mild, and the rainfall was somewhat less than normal. The center of a severe disturbance past over the northern boundary of the district on the 1st. This was followed by a long period without storms that lasted until the 19th, when disturbances again began crossing the North Pacific States, and continued with great frequency nearly up to the close of the month. Eight warnings for storms were issued, and with hardly an exception they were fully verified. The most severe storm occurred on the 25th, at which time maximum velocities of slightly over 70 miles an hour occurred at the coast stations, and the unusually high velocity of 51 miles was reported at Seattle, Wash. Notwithstanding the long period of stormy weather no noteworthy marine casualties occurred, and this of itself bespeaks the value of the warnings.—*E. A. Beals, District Forecaster.*

RIVERS AND FLOODS.

The stages of the rivers of the Mississippi system did not depart greatly from their usual averages for the time of the year. There was a fair rise in the Ohio River about the middle of the month. It past into the Mississippi on the 20th and reached the Gulf of Mexico about December 3.

The rains of the 6th and 7th caused a general rise in the rivers of southern New England and the Middle States, but not to within several feet of the flood stages, except in the lower Connecticut and Hudson rivers. Both of these rivers had been quite high as a result of frequent rains over the upper watersheds, so that the heavy rains of the 6th and 7th were certain to result in some high water. Warnings for the lower Connecticut were issued on the 7th, and on the morning of the 8th the stage of the river at Hartford was 19.7 feet, 3.7 feet above the flood stage. The crest stage of 20.3 feet was reached on the morning of the 9th, after which the decline set in. The damage and losses were trifling, as the water had not had an opportunity to recede greatly from the high stage of October 31.

Warnings were issued on the 7th for flood stages in the Hudson River in the vicinity of Albany. The flood stage of 12 feet at Albany was past during the night of the 7th, and by the morning of the 9th the water stood at 13.9 feet, 1.9 feet above the flood stage, and practically the exact stage that had been forecast. At Troy, N. Y., the crest stage was 18 feet, 4 feet above the flood stage.

Advisory warnings were issued on the 22d and 23d for a moderate rise in the Alabama River, and on the 23d for a similar condition in the Oconee and Ocmulgee rivers of Georgia. Warnings were also issued at the proper time for the flood that occurred in the Wateree River of South Carolina on the 24th and 25th, and for the flood stage in the lower Roanoke River on the 26th.